

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for determining ~~the~~ a concentration of a ~~substance~~ glucose in at least one of an in-vitro ~~[[or]]~~ and in-viva specimen containing body liquid, the method comprising: ~~the steps of~~

arranging a first electrode (18) at said specimen, wherein said the first electrode is electrically insulated from the specimen by a cover layer, and wherein the first electrode is arranged on a first side of a electrically insulating substrate between the substrate and the cover layer;[[,]]

applying a modulated electrical voltage to the first electrode for generating a modulated field in the specimen; and

measuring at least one parameter (~~A, phi~~) depending on a response of the specimen to the field and determining the concentration therefrom.

2. (Currently amended) The method of claim 1 comprising the step of arranging a second electrode (~~19, 22~~) at said specimen, wherein the modulated electrical voltage is applied between the first and the second electrode (~~19, 22~~).

3. (Currently amended) The method of claim 2 wherein the second electrode (~~19, 22~~) is in electric contact with the body liquid in the specimen.

4. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 further comprising the step of measuring a temperature (~~T~~) of the specimen and using the temperature ~~in the determination of~~ to determine the concentration.

5. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the modulated electrical voltage is a sine voltage.

6. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the modulated electrical voltage has a frequency between 10 MHz and 2 GHz, ~~in particular between 20 MHz and 70 MHz.~~

7. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the parameter (A , ϕ , f_0) depends on the electrical impedance at the first electrode.

8. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the response of the specimen is measured by measuring a signal reflected from the first electrode.

9. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein an antenna electrode (33) is arranged at the specimen in proximity to the first electrode (18) and wherein the response of the specimen is measured by measuring a signal transmitted from the first electrode (18) to the antenna electrode (33).

10. (Canceled)

11. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the specimen is a living body.

12. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 comprising the step of using calibration data to convert the parameter (A , ϕ , f_0) to the concentration.

13. (Currently amended) The method of ~~one of the preceding claims~~ claim 1 wherein the first electrode forms part of a resonant circuit (5) having a resonance frequency (f_0) and wherein the resonant circuit (5) is operated substantially at the resonance frequency.

14. (Currently amended) The method of claim 13 wherein the resonant circuit is at least part of a tank circuit of an active oscillator (40) and wherein the parameter is at least one of an amplitude (A) and and or a frequency (f_0) of a signal generated by said the oscillator (40).

15. (Currently amended) The method of claim 13 wherein the modulated voltage is frequency swept from a frequency (f_{\min}) below the resonance frequency (f_0) to a frequency (f_{\max}) above the resonance frequency, and ~~in particular~~ wherein the parameter is at least one of a signal reflected to the first electrode at the resonance frequency (18) ~~[[or]]~~ and transmitted to an antenna electrode (33) at the resonance frequency (f_0).

16. (Currently amended) A device for determining ~~the~~ a concentration of ~~a substance~~ glucose in at least one of an in-vitro and ~~[[or]]~~ in-vivo specimen containing body liquid, ~~in particular for carrying out the method of one of the preceding claims; the device~~ comprising:

an electrically insulating substrate;

a first electrode (18) covered by a cover layer (29) of insulating material, wherein the first electrode is arranged on a first side of the substrate between the substrate and the cover layer;

a signal source (1) connected to the first electrode (18) and configured to applying a modulated electrical voltage to the first electrode (18) for to generate ~~generating~~ an electric field in the specimen~~[[,]]~~;

a measuring circuit (7) for measuring configured to measure at least one parameter depending on a response of the specimen to the field~~[[,]]~~; and

a data processor (8) determining configured to determine the concentration from the parameter.

17. (Currently amended) The device of claim 16 comprising a holder (31) for fixing the first electrode (18) to a part of a body with the cover layer (29) facing the body.

18. (Currently amended) The device of ~~one of the claims 16 or 7~~ claim 28 further comprising an electrically insulating substrate (17), wherein the first electrode (18) is arranged on a first side (20) of the substrate (17) between the substrate (17) and the cover layer (29).

19. (Currently amended) The device of claim ~~[[18]]~~16 further comprising a second electrode ~~(19, 22)~~ arranged on the substrate, wherein the signal source (2) is connected to and configured to apply the modulated electrical voltage between the first (18) and the second (19, 22) electrodes.

20. (Currently amended) The device of claim 19, wherein the second electrode ~~(19, 22)~~ comprises a bottom electrode layer (22) arranged on a second side (21) of the substrate (17), said bottom electrode layer (22) having a larger extension than said top electrode layer (18).

21. (Currently amended) The device of ~~one of the claim~~[[s]] 19 ~~or 20~~, wherein the second electrode ~~(19, 22)~~ comprises a top electrode layer (19) arranged on the first side (20) of the substrate (17), said top electrode layer (19) being arranged around at least part, in particular substantially all, of the first electrode (18).

22. (Currently amended) The device of ~~one of the claims 16 to 21~~claim 16, wherein the first electrode (18) is elongate having a width ~~much~~ substantially smaller than a length.

23. (Currently amended) The device of ~~one of the claims 16 to 22~~ claim 16 comprising a first (4) and a second (6) signal path between the signal source (1) and the measuring circuit (7), wherein the first electrode (18) is arranged in the first signal path (4) and a reference load (R3) is arranged in the second signal path (6), and wherein the measuring circuit (7) is adapted to measure at least one of a relative amplitude (A) and~~[[/or]]~~ a phase (ϕ) of signals from the first and second signal paths.

24. (Currently amended) The device of ~~one of the claims 16 to 23~~ claim 16 wherein the first electrode (18) is part of a capacitor (C) of a resonant circuit (5) comprising the capacitor (C) and an ~~inductance~~ inductor (L) connected to the signal source (1).

25. (Currently amended) The device of claim 24 wherein the capacitor (~~C~~) and the ~~inductance~~ inductor (~~L~~) are arranged in series.
26. (Currently amended) The device of ~~one of the claims 24 or 25~~ claim 24 wherein the measuring circuit (~~7~~) is ~~adapted~~ configured to measure a voltage over the resonant circuit (~~5~~).
27. (Currently amended) The device of ~~one of the claims 24 to 26~~ claim 24 further comprising an antenna electrode (~~33~~) arranged in proximity to the first electrode (~~18~~), wherein the measuring circuit (~~7~~) is adapted to measure a signal transmitted from the first electrode (~~18~~) to the antenna electrode (~~33~~).
28. (Currently amended) A device for determining ~~the~~ a concentration of a substance in body liquid of a human body, ~~in particular of one of the claims 15 to 26,~~ the device comprising:
- an elongate first electrode (~~18~~) having a width ~~much~~ substantially smaller than a length[[],];
 - a holder (~~31~~) for fixing the first electrode (~~18~~) to at least one of an arm [[or]] and a leg of a body with a longitudinal axis of the first electrode being substantially parallel to the at least one arm [[or]] and leg;
 - a signal source connected to the first electrode applying a modulated electrical voltage to the first electrode (~~18~~) for generating a modulated field in the specimen[[],];
 - a measuring circuit (~~7~~) for measuring at least one parameter (~~A, phi, f0~~) depending on a response of the specimen to the field[[],]; and
 - a data processor determining the concentration from the parameter.
29. (New) The device of claim 28 further comprising a ring electrode extending around the first electrode.
30. (New) The device of claim 29 wherein the ring electrode is connected to a ground.

31. (New) The device of claim 29 wherein the ring electrode surrounds a single strip electrode with the strip electrode forming the first electrode.
32. (New) The method of claim 6 wherein the modulated electrical voltage has a frequency between 20 MHz and 70 MHz.